Diagnosis of Alzheimer's Disease Climbs

Alzheimer's Disease (AD) is a type of dementia that involves the progressive development of cognitive deficits, including memory impairment, and at least one other deficit, such as language impairment (aphasia). Additionally, social or occupational functioning is marked by a significant decline. Dementia is commonly characterized by emotional and behavioral disturbances. Because of its association with specific brain anomalies, AD is considered to be a distinct disease entity.[1]

Cost Estimates

Nationally, in 2000, Medicare and Medicaid spending for enrollees with AD was an estimated $31.9 billion and $18.2 billion, respectively for a total cost of over $50 billion. In the year 2000, 14.4 percent of total Medicare spending was allocated toward enrollees with AD, even though these patients represent less than 10 percent of all Medicare beneficiaries. In Maryland, the total government health insurance expenditures for individuals with AD were estimated to be $918 million for the year 2000 (i.e., $630 million in Medicare, and $288 in Medicaid).[2]

AD represents a substantial cost to Medicare for two major reasons. First, patients diagnosed with dementia often have other age-related problems. Nationally, these comorbidites include: cancer (20 percent), congestive heart failure (28 percent), diabetes (22 percent), and chronic obstructive pulmonary disease (27 percent). Dementia complicates the treatment of these other conditions, adding an average of 4 extra days to hospitalizations and an additional $4,000 to the cost of that care.[2]

Second, impaired memory and judgment give rise to medical crises because of AD patients' inability to manage their own care. For example, patients diagnosed with dementia are twice as likely to suffer from fractures compared to other members of their age cohort.[2]

Prevalence

The prevalence of AD appears to be increasing. In 1996, 1.0 percent of the traditional (i.e., non-HMO) Maryland Medicare population was diagnosed with AD. In 1999, this percentage nearly doubled, rising to 1.8 percent. These numbers are probably underestimates because until very recently, Medicare rejected many claims for people with AD and other types of dementia. The rapid growth in AD greatly exceeds the increase in the numbers of elderly in Maryland during the same time period and cannot be explained by the "graying" of the population. Between 1996 and 1999, the population aged 65 years and older increased by 3.21 percent, and those aged 85 years and over increased by 11.26 percent. AD is most commonly found in the latter age group. As Table 1 indicates, the median[A] age of Medicare enrollees diagnosed with AD was approximately 83 years in both 1996 and 1999. The median age of Maryland Medicare enrollees was approximately 75 years during this period of time.

Utilization of Practitioner Services

In 1996, the median number of services per AD patient was nearly twice that of other Medicare enrollees. In 1999, the median number of services received by AD patients dropped by 16 percent, from 44 to 37. During the same three-year period of time, the median number of services received by Medicare enrollees without AD increased by 9 percent, from 23 to 25 per patient. In 1999, AD patients received nearly 50 percent more services than Medicare enrollees without AD.

For comparison purposes, Table 1 also presents the percentages of Medicare patients with dementia in 1996 and 1999. Around 5 percent of Maryland Medicare enrollees were diagnosed with dementia in both 1996 and 1999. The number of patients with this diagnosis remained virtually the same.

Table 1: Maryland Medicare Patients[3,4]		
	1996	**1999**
Total no. of enrollees	543,138	532,589
No. of enrollees without AD	483,699	439,141
No. with AD	5,304	9,678
No. with dementia	24,999	24,952
Maryland Medicare Patients with AD		
Median #services/patient	44.0	37.0
Median age (in years)	83.0	83.0
Maryland Medicare Enrollees without AD		
Median #services/patient	23.0	25.0
Median age (in years)	75.0	75.0

Only traditional (i.e., non-HMO) Medicare patients are represented. See footnote #3 for reference for total number of Medicare enrollees. All other numbers were derived from MHCC analyses of the Medical Care Data Base for 1996 and 1999. Enrollees were considered to have AD if any of their four diagnoses codes was: 331.0 (AD) or 290.1 (pre-senile dementia) with a procedure code indicating an Evaluation and Management service. Additionally, these patients were included only if they did not have a diagnosis indicating psychosis. Enrollees were considered to have dementia if any of their four diagnoses codes was: 294.1, 797, 290.0-290.9, or 331.1 - 331.9.

[A]The median is the middle value in a numerically ordered set.

Figure 1: Rate of Change in Prevalence of Alzheimer's Disease among Maryland Medicare Enrollees: 1996-1999*
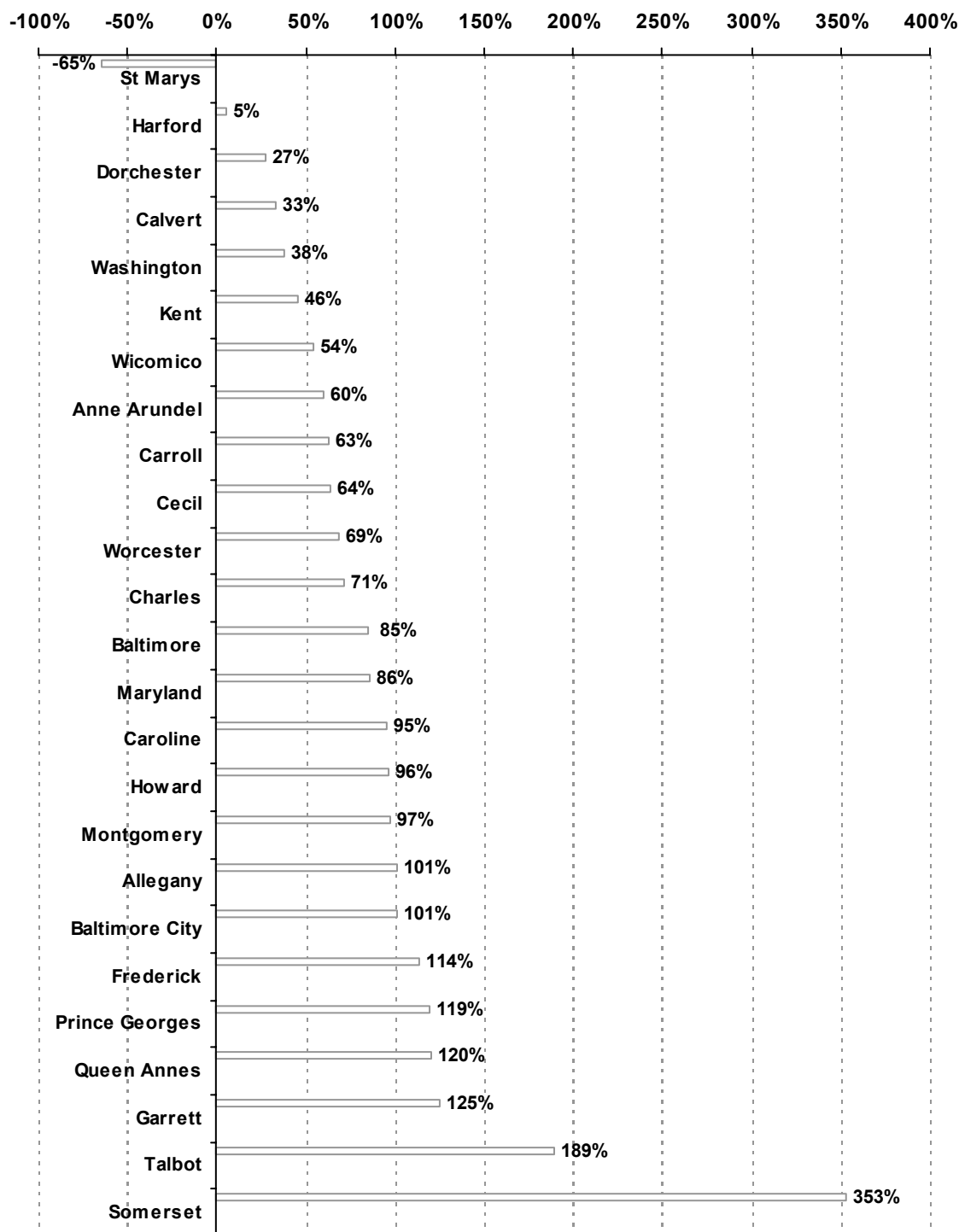
*Rate of change was calculated as the difference between the prevalence rates in 1999 and 1996, divided by the prevalence rate in 1996.

Figure 1 illustrates how the rates of increase in AD varied widely across the state's jurisdictions between 1996 and 1999. The largest gains were noted in Somerset (353 percent) and Talbot (189 percent) counties, both located in the Eastern Shore region. These counties are typically characterized as small rural counties with less than 2 percent of the elderly population. St. Mary's County experienced a decline of 65 percent, and the prevalence of AD in Harford County remained virtually the same between 1996 and 1999.

Changes in the prevalence rates of AD across the state cannot be explained by differences among the counties in the growth or decline of their elderly populations. For instance, Somerset County was characterized by one of the smallest increases in the population aged 85 years and older (i.e., only 5 percent) between 1996 and 1999, while Harford County was characterized by one of the highest rates of increase in this population (i.e., 19 percent).

Baltimore City, and Montgomery, Prince George's, and Baltimore counties account for approximately 60 percent of the population aged 65 and older. Between 1996 and 1999, Baltimore County experienced an increase in AD that was virtually identical to the State average. However, the percent changes in the remaining jurisdictions all exceeded the percent change for the State by a noticeable degree: Montgomery County (13 percent), Baltimore City (17 percent), and Prince George's County (38 percent).

Reasons Underlying The Increase in AD

The remarkable increase in the diagnosis of AD over the period between 1996 and 1999 may be the result of several factors. Increased awareness of the disease may have prompted greater vigilance on the part of clinicians and the diagnosis of patients in early stages of AD. It is noteworthy that cases of dementia remained virtually unchanged between 1996 and 1999, even though the number of older patients increased during this period.

Another reason for the increase may involve improvements in medical coding. Medicare will pay 80 percent of the Medicare-approved amount for certain treatments if the primary diagnosis is coded as AD. However, if the primary diagnosis is for another type of mental illness, such as dementia, the Medicare payment is restricted to 50 percent of the approved amount.

Comorbidities, Conditions, & AD

As Table 2 illustrates, in 1996, the comorbidity most commonly associated with AD was nail fungus, which occurred in 36 percent of Medicare enrollees with AD. The other top comorbidities were: senile dementia (35 percent), unspecified essential hypertension (28 percent), certain adverse effects not elsewhere classified (27 percent), and urinary tract

infection (23 percent). In the Medicare population without AD, the rates for each of these diagnoses were lower, in most cases by a substantial degree. This phenomenon is most apparent in the case of senile dementia which was nearly 12 times more likely to appear in the AD population.

In 1999, the leading comorbidity associated with AD was also nail fungus (36 percent). The remaining top 4 comorbidities were: benign essential hypertension (26 percent), unspecified essential hypertension (26 percent), other specified problems involving health status (22 percent), and senile dementia (22 percent). The prevalence of unspecified essential hypertension was similar in both the AD population and the Medicare population without AD. The prevalence of three comorbidities in the AD population far exceeded the prevalence in the Medicare population without AD (i.e., nail fungus, other specified problems influencing health status, and senile dementia). Benign essential hypertension was 37 percent more likely to occur among Medicare enrollees without AD.

Table 2: Most Prevalent Specific Comorbidities in the Maryland Medicare Alzheimer's (AD)[B] & Traditional Medicare (MC) Populations

1996		
Diagnosis	AD	MC
Nail fungus	39.9%	11.4%
Senile dementia, simple type	35.1	2.7
Unspecified essential hypertension	27.6	26.0
Certain adverse effects not elsewhere classified	27.4	6.1
Urinary tract infection, unspecified	22.6	8.6

1999		
Diagnosis	AD	MC
Nail fungus	36.1%	14.4%
Benign essential hypertension	26.0	35.5
Unspecified essential hypertension	26.0	25.5
Other unspecified problems influencing health status	22.4	7.5
Senile dementia, simple type	22.1	2.4

[B]These percentages are comprised of two components: The denominators represent the total number of Maryland Medicare enrollees with AD and the total number of Maryland Medicare enrollees without AD. The numerators represent the total number of those enrollees with the noted diagnosis (one of the four recorded for Medicare). Individuals were excluded if the diagnosis was associated with a radiological or laboratory procedure. All beneficiaries are age 65 or older. A beneficiary can be represented more than once, and percentages will not total 100 percent.

Table 3 specifies the prevalence of selected general conditions associated with AD. For AD patients, the order of magnitude of the prevalence of all 5 conditions listed in Table 3 remained the same between 1996 and 1999: stroke, diabetes, cancer, coronary artery disease, and osteoarthritis. For this group, the prevalence of cancer increased between 1996 and 1999 (i.e., by 5 percent) as did the prevalence of coronary artery disease (i.e., by 3 percent).

Table 3: Prevalence of General Conditions Associated with the Maryland Medicare AD Populations[C]

Condition	1996	1999
Cancer	13.4%	14.1%
Diabetes	17.8%	16.3%
Stroke	30.2%	25.3%
Osteoarthritis	11.7%	10.3%
Coronary artery disease	11.9%	12.3%

[C]The percentage is comprised of two components: The denominator represents the total number of Maryland Medicare enrollees with AD, and the numerator represents the total number of those enrollees with at least one diagnosis of the selected condition. The following ICD-9 codes were associated with each condition: cancer (140.0-208.9), diabetes (250.0-250.9), stroke (430.0-438.9), osteoarthritis (715.0-715.9), and coronary artery disease (414.0). Each patient is associated once with a particular condition, and patients were excluded if their diagnosis was associated with a radiological or laboratory procedure. All beneficiaries are age 65 or older.

Alzheimer's Mortality

As specified in Table 4, the AD mortality rate per 100,000 population appeared to increase statewide between 1996 and 1999.

AD Mortality Rate (Per 100,000): 1996-1999[5]

1996	13.8%
1997	13.6%
1998	13.0%
1999	15.2%

The general increase during this three-year period seemed to be fueled by the substantial jump that occurred in 1999. However, caution must be exercised in interpreting differences in mortality between 1998 and 1999 data due to the changes in the classification of diseases and the coding rules for selecting the underlying cause of death between ICD-9 and ICD-10. The increase in mortality may be spurious due to possible underestimates of comparability ratios.[6]

Outlook for Alzheimer's Disease

Pharmaceutical treatment is now available for patients with AD. Mild to moderate forms of the disease can be treated with four acetylcholinesterase inhibitors (tacrine, donepezil, rivastigmine, and galantamine). Clinical studies have demonstrated significant improvements in cognitive function, behavioral symptoms, and functional ability for all of these medications.[7]

An alternative pharmaceutical strategy is to focus on patients who have mild cognitive impairment (MCI) but normal functioning in order to defer the development of Alzheimer's.

AD is the result of the accumulation of plaque in the brain, and new drugs are being developed to help memory formation despite the plaque (i.e., ampakines) or to slow its buildup (i.e., through vaccines).[8] Developments in molecular genetics and brain imaging techniques have generated new insights into the pathogenesis of AD with important implications for treatment.

As a result of new scientific advancements, on March 30, 2002, the federal government authorized Medicare coverage for the treatment of AD. In the past, many Medicare claims for mental health services, hospice care, and home care were automatically denied because of the assumption that treatment for AD patients was futile. New studies have demonstrated that people with AD can benefit from physical and occupational therapy as well as psychotherapy. The government decided to change its policy because clinicians can now diagnose AD early in its development when patients are most likely to benefit from therapy and other treatments. Dealing with the disease in its early stages is not only cost effective, but can also extend a relatively normal life. The new Medicare policy will provide reimbursement for more therapy and outpatient services in order to keep patients out of nursing homes and reduce the costs to government, patients, and their caregivers.[9]

Endnotes

[1] General Accounting Office (1998). *Alzheimer's Disease: Estimates of Prevalence in the United States*. GAO/HEHS-98-16. January.
[2] Alzheimer's Association (2000). *Medicare and Medicaid Costs for People with Alzheimer's Disease*. April 3.
[3] http://www.hcfa.gov/stats/stats.htm
[4] Pippenger, M. et al. (2001). Neurologists' use of ICD-9CM codes for dementia. *Neurology*, 56:1206-1209. May (1 of 2).
[5] Derived from information provided by the Division of Health Statistics, Maryland Department of Health and Mental Hygiene.
[6] Hoyert, D.L. et al. (2001). Deaths: Final Data for 1999. *National Vital Statistics Reports*, 49(8). Hyattsville, MD: National Center for Health Statistics.
[7] Zurad, E.G. (2001). New treatments of Alzheimer's disease: A review. *Drug Benefit Trends*, 13(7):27-40.
[8] Freundlich, N. (2001). Arresting Alzheimer's: Drugs that fight milder memory loss may prevent its onset. *BusinessWeek Online*, June 11. www.businessweek.com/magazine/content/01_24/b3736095.htm
[9] Pear, R. "In a First, Medicare Coverage is Authorized for Alzheimer's." *New York Times*, March 31, 2002.